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SCIENCE NEWS LETTER

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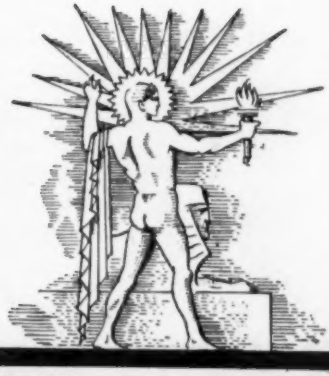
THE WEEKLY SUMMARY OF CURRENT SCIENCE •



August 23, 1941

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A SCIENCE SERVICE PUBLICATION

Do You Know?

Sea water contains about 50 known elements.

It is not unusual for migrating *birds* to travel at night.

A *tunnel* is being built under the town of Williamsburg, Virginia, to remove Yorktown-Jamestown traffic from the streets.

The *shrub* called Rose of Sharon, under the impression that it is a native of Syria, has been proved to have originated in China.

Old *mulberry* trees on Mulberry Island, on the James River in Virginia, are reminders of early colonists' efforts to start silk culture.

As much as one-third of the vitamin C in quick-frozen vegetables may be dissolved in the *cooking water*—which should not be thrown away.

Presented to the U. S. Army by the U. S. Antarctic Expedition, 37 *husky* dogs are being trained in New Hampshire for sled service in Newfoundland.

Since California's soldiers have taken to *archery* as a sport, resourceful WPA workers have been making bows for them from broken and discarded shovel handles.

A two-ton duraluminum gate from New York's Triborough Bridge was a large item donated in the recent national drive to collect *aluminum* for defense.

QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER *are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.*

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What happens to a racehorse when it isn't getting enough calcium? p. 121.

How can eye disease cut milk yield? p. 121.

ZOOLOGY

What proportion of apes are left-handed? p. 125.

A new *fabric* for Russia is described as 50% wool and 50% fiber from the albumen found in lupine seeds.

Studying use of plastics in *bombers*, 600 bomber parts were tested with plastic substitution, and 34 parts were found practicable in this material.

A competitive exhibit of home-made farm and home *equipment* is a feature of New York State Fair each summer.

Furniture that suits individuals five feet eight inches tall is generally comfortable for the majority, says a Department of Agriculture publication.

SCIENCE NEWS LETTER

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BOTANY

Principal Hay Fever Season Marches up Map on Schedule

Ragweeds Come Into Bloom Earlier in Northern States; Spores of Certain Species of Fungi Also Cause Sneezes

By OREN C. DURHAM
Principal Botanist, Abbott Laboratories

ALL ALLERGY, like all Gaul, may be divided into three parts—three, because of the three principal avenues of entrance or points of attack. Allergic poisons may, in the form of cosmetics, chemical or plant juices, penetrate the skin of the hands, face or other parts of the body and thus assault us from without. They may be swallowed, as food, and subsequently snipe at us from within. But the most common and most insidious offenders are those invisible enemies that pounce upon us from the air. They find our most vulnerabe spots—the tender membranes that cover the eyeballs, and those that line the eyelids, the nasal cavities and the lungs.

With reasonable care we may usually succeed in avoiding unfriendly food and chemicals. But the aerial allergy attack by pollen grains, mold spores and buoyant insect scales is so widespread, so intense and long drawn out that special personal defense measures must be taken. Nevertheless, a certain grim satisfaction may be had from the fact that there are few surprise attacks. All of the major allergenic broadsides are loosed on well-developed schedules.

Over the northern and eastern states the blossoming dates of ragweed are well synchronized, but in the south central and southern states the weeds usually come to maturity later than in the north. However, there are a few interesting local exceptions. The Arizona ragweed season occurs in the spring—March and April—instead of August and September. In southern Florida, on land where winter tomatoes and other vegetables are grown, common ragweed comes into full bloom in May. Wyoming has a small amount of ragweed pollen in the air in June and July. Along the Gulf Coast, from Tampa to Brownsville, ragweed pollination begins in September and drags along well into November.

If one were anxious to follow ragweed around the calendar and the map he could keep in close touch with it about nine months out of the year. He could dodge it almost completely by staying in Houston until about the last week of September and then changing his residence to some northern city. A non-stop flight from Houston to Minneapolis by plane at 10,000 feet altitude would do the trick.

Spores of certain kinds of fungi, principally molds, cause hay fever and asthma in just the same way as pollen, but not necessarily in the same persons. One man may be sensitive to certain pollens only, another to mold spores but not pollen, and still another to both pollens and spores.

It is possible to prevent the symptoms caused by mold spores. The skin testing and treatment are carried out in the same way and produce the same degree of benefit as pollen treatment. A graduated series of hypodermic injections brings the patient's tolerance to a high level before the season begins and the treatment is continued at regular intervals to keep up the tolerance through the season.

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PHOTOGRAPHY

Infra-Red Photoflash Bulb Takes Pictures in Darkness

AMATEUR photographers may now photograph the proverbial black cat in the dark cellar—and do it without the cat knowing he's been photographed.

Several years ago, as a special stunt, a group of executives visiting the research laboratory of a large photographic concern were so photographed, with infra-red rays, which consist of waves too long to affect the eye. But now a special photo-flash bulb will soon be placed on the market, to permit any photographer to take such pictures. The bulb is covered with a filter that looks black, because it stops all the visible light. However, the infra-red goes through freely.

Ordinary film will not work with this bulb, but infra-red sensitive film is now available from several manufacturers. As the rays are focussed at a different plane from those used in ordinary photography, the focussing must be changed

PICTURES IN THE DARK

Now you can take a photograph in your lightless darkroom without fogging the print that is just coming up in the "soup." It is made possible with the new "Blackout Superflash." This picture was taken at 1/50th of a second, f 5.6, 6 feet from the camera. The only other light was an ordinary ruby safelight.

slightly if sharp pictures are to be secured. The most convenient way of using the new bulb is with a synchronizer that permits snapshots, the shutter being opened automatically while the flash is at its height. However, as with ordinary flash bulbs, the shutter of the camera, on a firm support, may be opened, the bulb fired, and then the shutter closed. This method is not effective in stopping rapid movement.

Photographs may be taken in theaters and similar places without disturbing the audience. Another use is seen in case of possible blackouts, where photography can be done without the visible flashes of light that might be of use to enemy raiders.

The new infra-red flash bulb is manufactured by the Wabash Photolamp Corporation, of Brooklyn, N. Y.

Science News Letter, August 23, 1941

PHYSIOLOGY

Record-Breaking Case of Weight Reduction Reported

Woman Gets Rid of 300 Pounds in 18 Months; Heroic Dieting Causes Improvement in Health

LOSING 300 pounds in 18 months is the heroic feat in reduction accomplished by a woman patient whose case is described by Dr. James J. Short, associate professor of medicine in Columbia University's post-graduate medical school, in the *Journal of the American Medical Association*. (Aug. 16).

The patient, who for obvious reasons remains nameless, is a married woman 35 years old. She had always been a "fat girl"—she weighed 200 pounds when she was 14; 260 pounds at 21. Both her parents had been big persons; her father a six-foot 200-pounder, her mother decidedly stout. She herself had abnormal dietary habits, eating moderate quantities of meat, fish and eggs, little fruit and no vegetables, but stuffing herself with large amounts of cake and other baked goods.

Finally, with a troublesome cough of five or six months' duration and a number of other distressing symptoms, she presented herself for medical treatment. There seemed to be nothing the matter with her except extreme obesity, so a diet calculated to produce rapid reduction was outlined for her. Since it seemed unlikely that she could exercise sufficient self-control during the reducing period, she was placed in a nursing home where she would have no chance of raiding the pantry, no matter how hungry she became.

The diet provided first for sufficient proteins to replace ordinary losses from muscles and other non-fatty tissues, and also insured proper vitamin intake. Heaviest cuts were in fats and carbohydrates, the fat-making foods. Total calories were between 600 and 800 a day —about half the usual requirement for a normal adult.

The patient lost weight rapidly from the first. Over the 18-month period the loss averaged 16 2/3 pounds per month. In the end, she had been transformed from a behemoth of nearly 480 pounds to a husky but trim-enough figure of 175.

There were difficulties on the way, to be sure. The patient was anything but comfortable at times, and complained of nausea and abdominal pains. More serious was an acid condition that occasionally threatened. At such times, the diet was readjusted to include a little more carbohydrates, which are alkalinizing foods. All the way, a mass-reduction job of this kind was not a thing for an amateur to attempt; it required the constant vigilance of a medical specialist.

After the masses of fat had disappeared, there was still a serious condition to correct. The human skin does not shrink as drastic reduction occurs, and at the end of the treatment the woman had loose, unsightly, drooping folds of outer tissue on her body and arms. To correct this, surgical operations were necessary, to take out the slack.

Her muscles, once interpadded with fat, had become loose, so that at first she could scarcely walk. However, muscle tone was eventually spontaneously restored, so that she is now able to get about and do her housework in about normal fashion.

Science News Letter, August 23, 1941

● RADIO

Thursday, August 28, 2:45 p.m., EST

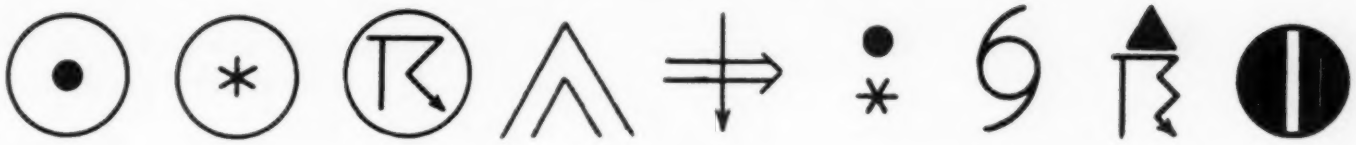
On "Adventures in Science," with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. Marston Morse, president of American Mathematical Society, will discuss "Mathematics in Defense."

Listen in each Thursday.

CLOUD SHORTHAND

This is the new symbol used on U. S. Weather Bureau maps for these wool-pack or cumulus clouds. The picture and symbol on the cover are of the cumulonimbus, or "anvil" cloud, familiar on thundery hot days in summer.



WEATHER SIGNS

In the sign language of Uncle Sam's new weather maps, these symbols (from left to right) stand for rain, snow, thunderstorm, heavy squalls, blizzard, mixed rain and snow, hurricane, thunderstorm with hail, and sky nine-tenths clouded.

METEOROLOGY

New Weather Map Symbols Recall Indian Picture Writing

Presence and Movement of Air Masses Shown For First Time; Use Will Spread to All Cities

See Front Cover

WEATHER maps are going to have a radically different appearance before long. They will be speckled all over with new symbols that look like Indian picture-writing, with a suggestion of shorthand thrown in.

They won't be hard to read, however. Most of them have a graphic resemblance to the thing they are intended to indicate. Thus, a round dot means rain, a six-pointed star means snow, a white circle means a clear sky, a down-sloping line means falling barometer, and so on.

Cloud shapes have their symbols, which are really rough sketches of their outlines. The flat-bottomed, round-topped "woolpack" or cumulus clouds are indicated by a half-circle. A half-circle surmounted by the inverted base of a triangle signifies the lightning-charged cloud we see on hot summer afternoons, known as the "anvil" cloud or cumulonimbus. Symbol and cloud are both shown on the front cover of this week's SCIENCE NEWS LETTER. A straight line ending in a short curve or hook suggests the streaky, curve-ended clouds called "mares' tails" by sailors and cirrus by meteorologists.

All the symbols of the new map are as simple and graphic as that.

On each day's map, every city where there is a Weather Bureau observatory will have spotted alongside it a cluster of these symbols. Anyone who has learned the "alphabet" will be able to tell at a glance that city's temperature, barometer state, degree of cloudiness, direction and force of wind, and other weather facts.

Missing from the new maps will be the old familiar curved lines that passed through points of equal temperature—the isotherms. Isobars, marking regions of high and low pressure, will survive, but they will be more widely spaced than at present. Significant introductions will be indications of air masses, with letters showing polar or tropical origin, and whether they are warm or cold. The fronts where they come in contact will also be shown; it is at these fronts that liveliest weather changes often take place.

Observations for the making of the new maps will be taken at 1:30 a.m. instead of 7:30 as at present. This will enable the Weather Bureau to distribute the maps earlier in the business day when they will be of more use.

The new maps will be printed and used first in Washington, D. C. Later, they will replace the old-type maps in other cities. The rate at which the change-over will take place will depend largely on how rapidly funds can be made available for the alterations in the map-printing equipment.

Science News Letter, August 23, 1941

MARES' TAILS

A hooked line suggests the shape of the wispy mares' tails or cirrus clouds such as these.

PHYSICS

Change from Wave Lengths To Frequencies Proposed

JUST as in the case of our radios, where wave lengths have been abandoned for kilocycles or frequencies, it is now proposed that the same change be made in optical work—for light is also a wave similar to the radio waves but of much shorter wave length, or, what is the same thing, of much higher frequency.

For many years those dealing with

light have been accustomed to measure what is called the resolving power of a spectroscope, which is the same thing as the selectivity of a radio set, by the smallest difference in wave lengths that the instrument could distinguish. Now it is proposed to use for this purpose the smallest difference in frequencies that the instrument can distinguish—just as has been done for our radios.

The suggestion was made by S. Tolansky of the University of Manchester. (*Nature*, July 12.)

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PLANT PHYSIOLOGY

Vitamin B_1 Found Concentrated In Buds of Many Common Trees

LARGE quantities of vitamin B_1, the "morale vitamin" which exercises a beneficial effect on the human nervous system, have been found in the buds and leaves of many common American trees, by Yale University botanists.

Using a constant temperature tissue culture laboratory for experiments, the scientists found heavy concentrations of the substance in the buds of oak, red maple, horse chestnut, elm, sycamore and white pine trees.

"Although vitamin B_1 is now produced by synthetic chemical processes, this discovery points to a large natural source of vitamin B_1," stated Prof. Paul R. Burkholder. "This finding may offer a clue to the source of essential vitamins for many forest animals."

Prof. Burkholder, who is conducting his researches in cooperation with Prof. Edmund W. Sinnott, states that the vitamin seems to be formed in the young leaves and growing points of the shoot, whence it is transported through the bark into the roots and various portions of the plant.

Experiments in which basswood and maple trees were girdled, by removing a ring of bark from the trunk early in the spring, show that almost no vitamin B_1 has appeared below the ring in midsummer. Yet huge quantities of the vitamin have been found above the ring. This seems to indicate that ultimately a girdled tree may die not only from lack of food but from vitamin starvation as well.

Yale researches show that most green plants contain sufficient amounts of the vitamin for their normal growth. The amount of essential minerals in the soil and sunlight apparently influence the amount of B_1 which green plants are able to produce.

Vitamin B_1 is heavily concentrated in the buds of trees, according to Prof. Burkholder, just as it is in grain. Recently, flour refiners have sought to increase the vitamin content of flour by restoring B_1 after refining has taken place in order to provide more of the material for the nation's health.

The amount of B_1 is measured by the amount of growth of a mold which is very sensitive and is used as an indicator plane. Growth of the indicator plant will not take place unless vitamin B_1 is added, and the amount of growth varies directly wtih the supply of vitamins.

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ASTRONOMY

Distant Nebula Discovered; Looks Like Faint Star

DISCOVERY of a rare type of nebula was announced by Dr. Paul W. Merrill or shining cloud of gas, at a distance estimated to exceed 10,000 light years, of the Mount Wilson Observatory in a report to the Astronomical Society of the Pacific. The nebula was first detected on a plate taken with one of the smaller telescopes on Mount Wilson by William C. Miller, Dr. Merrill's assistant.

A photographic analysis of the light from the nebula made with the 60- and 100-inch reflecting telescopes revealed the presence of hydrogen, oxygen, and helium, three gases which are also found in the atmosphere of the earth. The object is approaching the earth at the rate of 338,000 miles per hour.

Dr. Merrill stated that "although the nebula resembles a faint star even when seen through the world's largest telescope, actually it is probably of extraordinary brightness and may well be several thousand times larger than our whole solar system."

He also stated that the discovery of star-like nebulae may be of considerable interest for future work with large telescopes.

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OCEANOGRAPHY

Japanese Fishing Net Ashore at Wake Island

A JAPANESE landing has been made at Wake Island, halfway between Hawaii and Guam, where the Pacific Clippers stop. It will not be the occasion of an international "incident", however, for the landing party consisted merely of a number of hollow glass floats (which Japanese fishermen use instead of cork blocks) carrying a net lost overboard by some fishing boat. Oceanographers estimate that the long and lonely voyage of this bit of jetsam must have covered between 4,000 and 5,000 miles.

Members of the Pan-American Airways staff at Wake found the net on the coral breakwater, and sent the floats to the New York office. The floats are hollow glass globes about four inches in diameter, with a two-character Japanese inscription at the point where they were sealed shut. Similar floats are frequently found on the Pacific coast of this country, sometimes lost from Japanese boats operating on this side, sometimes perhaps having made the long journey from the opposite shore of the ocean, borne north to Alaskan waters by the Japan Current and thence down the coast.

Some of the floats picked up lately have been identical in pattern to the Japanese ones, but have borne the hammer-and-sickle emblem of the USSR. These presumably have been lost by Russian fishermen in the waters off Sakhalin island or Kamtchatka peninsula.

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PHYSICS

X-Ray Tests of Fibers Show Key to Strength

X-RAYS are used in a new method for estimating the strength of cotton fibers, developed in the laboratories of the U. S. Department of Agriculture. Dr. Earl E. Berkley, cotton echnologist, has demonstrated a direct relationship between the strength of the fibers and the "grain" of the strands of minute cellulose crystals that spiral through the fiber walls. When the X-rays show this "grain" as relatively straight the fibers are strong; when it makes a large angle with the sides the fibers are weak, like cross-grained lumber.

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AVIATION

New Model Curtiss Hawk Supplied to U. S. Army

AN IMPROVED model of the Curtiss Hawk P-40 pursuit plane which, as the Curtiss Tomahawk fighter, performed valiantly for the R. A. F. in the North African campaign, is now being supplied to the U. S. Army.

The new ship, known as the P-40D, is already rolling off the assembly lines of the Curtiss-Wright Corporation's plant in Buffalo, the firm's president, Guy W. Vaughan, announced.

It is a more streamlined version than the original model, he said. The fuselage has been cut down to decrease head resistance and its fire power has been increased 25% over the earlier plane, which had six machine guns, four in the wings and two in the fuselage. Originally driven with an Allison liquid-cooled engine developing 1090 horsepower, the Allison engine on the P-40D yields over 100 horsepower more.

No information about the speed of the new ship is released, though its predecessor was capable of 330 miles per hour at 15,000 feet altitude in level flight. In a vertical dive over Dayton, Ohio, in April, 1940, a Curtiss-P-40 averaged a speed of 660 miles per hour.

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PHYSIOLOGY

Vitamin Linked With Sex; Found Associated With Ova

VITAMIN A, the vitamin obtained from butter, carrots and other yellow foods, may be needed for production of one of the female sex hormones. Some relation between the vitamin and hormone production in the ovary is suggested by a discovery reported by Dr. Hans Popper and Dr. Alex B. Ragins, of Cook County Hospital and Cook County Graduate School of Medicine, Chicago.

Vitamin A itself imparts a characteristic green fluorescence in ultraviolet light, which disappears quickly due to destruction of the vitamin by the ultraviolet rays. Using this fluorescence to "see" the vitamin in body tissues, the Chicago scientists found it in various characteristic structures around the ova, and also found that the fluorescence undergoes typical changes in pregnancy and during the monthly cycles in women.

Tumors originating from structures in the normal ovary also impart vitamin A fluorescence.

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NEW FIGHTER

This is the new Curtiss Hawk P-40D pursuit plane being produced in large numbers for the U. S. Army Air Forces. It is powered with a liquid-cooled engine and equipped with a Curtiss electric propeller.

RADIO

Two-Way Radio Sets Used To Tell Who Is "Killed"

Enable Umpires To Make Their Decisions Within Five Minutes After Battery Theoretically Opens Fire

BOYS playing war shout, "Bang! You're dead!" Artillery at maneuvers has to do much the same kind of thing, except that it's on a bigger scale, and umpires decide who is to be "dead".

Introduction of two-way, police-type radio sets for this summer's maneuvers is making this part of the war game much easier to take care of, besides adding greatly to the accuracy of scoring. The sets enable umpires to make their decisions within five minutes after a battery theoretically opens fire, instead of the 25 minutes formerly required, when field telephones were the only means of communication. Under the old conditions, it frequently happened that the umpires never caught up with the results of this non-shooting artillery fire at all.

When a battery goes into action, in present-day maneuvers, the officers have their target assigned to them. Usually they cannot even see it from the gun position. They calculate the necessary firing data, the crews set fuses on dummy shells, load the guns and go through all the motions of firing. The only thing lacking is the actual bang of the guns and scream of the shells.

Umpires at the battery check every detail of the data and the firing performance. If they decide the shells have landed as intended, umpires on the other side are notified by the new radio sets. These officers then drive in a hurry to the site of the imaginary explosion, set up flags to mark the spot, and ignite smoke candles, torpedoes or flares to call further attention. If troop units are in the "shelled" area they are declared out of action.

The War Department has purchased 240 of these sets, at a total cost of $100,000. They are of the frequency-modulation type, so that umpires' messages to each other cannot be picked up by the field sets carried by the maneuvering troops, which use the older amplitude-modulation type. For mobility, the radio-using umpires range the field in trucks, command cars, weapon carriers and other cross-country motor vehicles.

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CHEMISTRY

Aluminum Eaten Away In the Kitchen Sink

THE HOUSEWIFE can do her bit toward conserving the aluminum supply not only by giving up her old pots and pans but by using cleaning compounds, in washing her good ones, that do not dissolve away the metal.

According to researches by J. F. J. Thomas, chemist of the National Research Council of Canada, (*Canadian Journal of Research,* July) some washing compounds eat away the needed metal.

To be sure, the action is very slow. Even in the worst cases it would take about a year of constant immersion to dissolve entirely away a light aluminum pan. But the remedy is so easy to apply that there is no reason why even this slight loss should not be prevented.

The investigation showed that the addition of 25% of water glass to even the worst of the washing compounds, say a teaspoonful to a heaping tablespoonful of the washing powder, will entirely stop all dissolvent action.

Water glass is a thick syrupy liquid commonly used to preserve eggs, is cheap, and can be obtained everywhere. Scientifically it is a solution of sodium silicate or metasilicate. Mr. Thomas found that trisodium phosphate and sodium pyrophosphate also prevented corrosion but not to the same extent as the metasilicate.

Most washing compounds advertised in the American market already contain these substances in sufficient quantity to be harmless to aluminum ware. Incidentally, Mr. Thomas remarks that the discoloration of aluminum utensils is no sure sign of deterioration.

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BIOPHYSICS

Lopsidedness of Life Is Subject of New Monograph

WHAT might be called the lopsidedness of life is the subject of a monograph, *Optical Activity and Living Matter,* newly published in this country. (*Reviewed, SNL, this issue.*) It came out in the nick of time, for the author, Prof. G. F. Gause, is a member of the faculty of the University of Moscow, and his country is now so swamped in war that further interchange of scientific ideas is at present impossible.

The monograph is a summary of research in a field that has apparently aroused relatively little interest among scientists in this country. It calls particular attention to the fact that all living things, from full-grown complex organisms down to the molecules of which they are composed, are predominantly either right-handed or left-handed—never both equally. If one snailshell, or climbing vine, twists to the right, all the others in the same species will twist in the same direction. You won't find an exception in a hundred thousand, maybe not in a million. The rarely occasional organism that reverses its family direction seems to be under penalty for its deviation, for Dr. Gause notes that such individuals appear to be "ecologically handicapped."

Organisms choose between right and left even in the molecules they absorb as food. These minute inanimate particles betray their characteristic structural twists by the way they turn the fronts of light waves in the polariscope. "Right-handed" sugars, amino acids and other basic food molecules are accepted by given species of yeasts and other microorganisms, while chemically identical but "left-handed" molecules are rejected. At the same time, other species will choose the left and refuse the right, in selecting their foods.

Thus the whole organism, from basic building-blocks of food to gross outer structure and even direction of movement, has its dominant orientation. Only in the non-living world, says Dr. Gause, will you find indifferent, evenly balanced mixtures of rights and lefts.

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PHYSICS—BIOLOGY

Streams of Neutrons Cause Hereditary Changes

STREAMS of neutrons, uncharged fragments of atoms smashed in the University of California cyclotron, have produced hereditary changes in living organisms, in experiments performed by Dr. Everett Ross Dempster.

As experimental material, Dr. Dempster used the familiar fruit fly, classic "guinea pig" of genetic research. He exposed male insects to the neutron stream, then mated them with untreated females and watched their offspring for mutations, or abrupt evolutionary changes. He found that neutrons are more effective than X-rays in producing certain types of mutations, less effective in producing others.

Science News Letter, August 23, 1941

IN SCIENCE

TECHNOLOGY

Money Still Wears Silk, But May Go All-American

DOLLAR bills that Uncle Sam's Bureau of Engraving and Printing is turning out are still wearing silk. But Treasury officials state that a shift to synthetic fiber replacing the familiar fine fibers of silk in paper money can be made at any time, since an official order on April 22 paved the way for a change. The order authorized as the distinctive feature of our currency paper "small segments of silk or synthetic fiber colored red and blue and incorporated in the body of the paper while in the process of manufacture."

The amount of silk needed for the paper is so small that the raw material in a pair of the soon-to-be-extinct silk stockings would dress up a lot of dollars. But if the United States goes all the way off the silk standard, our money will be all-American, too.

Science News Letter, August 23, 1941

ANATOMY

New Type Red Blood Cell Discovered in Young Mice

A NEW type of red blood cell has been discovered in newborn laboratory mice by Dr. Hans Grueneberg of University College, London (*Nature,* July 26). Named "siderocyte" by its discoverer, it differs from the common type of red blood cell in reacting to a chemical test for the presence of iron to which ordinary red cells do not respond. The test seems to indicate that the iron in the new type is a different compound from the hemoglobin of normal blood.

Discovery of a new kind of red blood cell, in so thoroughly explored a tissue as mammalian blood, is almost as startling as discovering a new island in the Caribbean sea. Since mice of the strains in which the new-type cells occur are always anemic at birth, gaining normal health as they mature, it is possible that Dr. Grueneberg's discovery may eventually have some significance in the study of anemia.

Science News Letter, August 23, 1941

NCE FIELDS

CHEMISTRY

Cotton Fabrics Developed For Making Powder Bags

POWDER BAGS, vital to the Army and ordinarily made by the million of silk goods, can be made successfully of cotton for most purposes, the War Department announced.

Foreseeing a possible silk shortage, the Ordnance Department experimented with cotton for this use as early as 1934, and has developed cotton fabrics not unlike sheeting and lawn used as dress goods. The special materials overcome a danger that cotton goods was supposed to have, of smoldering in the gun breech or barrel after a powder charge was fired. A smoldering fabric could cause a premature explosion when a new charge was introduced. Four kinds of cotton cloth differing in weight and strength have been developed for this use, none having an ash content of more than two-tenths of one per cent.

Silk powder bags will still be used for loading very heavy caliber guns, and silk tie straps for the heavier charges, but experiments now in progress may result in finding that silk substitutes can be used.

Science News Letter, August 23, 1941

VETERINARY MEDICINE

Vitamins and Minerals Help Thoroughbreds Win

TIPS "straight from the feedbox" will have more value for racing fans if they include information on what the horse in question has actually been eating. Vitamins and mineral salts, especially calcium, have a lot to do with the performance of a thoroughbred on the track, Dr. Cassius Way, New York veterinarian, told his colleagues at the meeting of the American Veterinary Medical Association.

The training diet of race horses, Dr. Way indicated, often fails to supply the balanced array of necessary vitamins. He has made analyses of blood samples from 116 thoroughbreds in training, and finds them quite low in sugar and calcium. Blood sugar, of course, is the prime energy source for their straining muscles during the race, and when blood calcium is too low its mineral teammate, phosphorus, is apt to be too high, at least relatively speaking. This calcium-phosphorus imbalance is apt to result in loss of appetite, an inflamed condition of the nerves, and general poor condition. A horse in that state is in no shape to win races.

In his practice, Dr. Way stated, he has succeeded in correcting this condition by supplementing the feed with a mixture of essential vitamins and minerals.

Science News Letter, August 23, 1941

ENTOMOLOGY

Pyrethrum Found Effective Against Silverfish Pest

SILVERFISH, the long, grayish insects that scamper through stored books, papers and linens, have just had their private lives examined and their death warrant written. The likes and dislikes of these elusive pests that destroy valuable papers, books and heirlooms have been discovered by Arnold Mallis, entomologist on the Los Angeles campus of the University of California.

The species used by Mr. Mallis in his studies, called *Ctenolepisma urbani* by entomologists, is unable to survive a spray of pyrethrum.

"When the silverfish is confined in a pyrethrum dust it shows great signs of irritation, often within 30 seconds. The pyrethrum dust adheres to the hairs on the body and around the mouth parts as well as upon all appendages. The insect becomes paralyzed within from three to ten minutes," said Mr. Mallis.

Sodium fluoride and sodium fluosilicate have been used in the past to control silverfish but were only partially effective. If these poisons are combined with pyrethrum, the lethal result to the pests is greatly enhanced. Treated "cards" sold commercially for silverfish control have little effect on the pests, Mr. Mallis reported.

The diet preference of silverfish was also studied, and it was found that animal fibers such as silk and wool are not as popular with the pests as vegetable fibers, linen, rayon, cotton and lisle. As all paper and fine old linens are made from vegetable fiber sources, this explains their choice of libraries and linen closets for habitation. A modern streak was discovered in the insects. They are very fond of Cellophane, Kleenex and onion-skin paper, preferring these materials to newsprint and cardboard.

Science News Letter, August 23, 1941

ENGINEERING

Chopped Cotton Expected To Aid Powder Production

COTTON chewed up short by machine is expected to play an important part in the preparation of the vast quantities of smokeless powder for this country's defense program.

Best material for smokeless powder has always been linters. These are the short, fuzzy threads left clinging to cottonseed hulls after ginning. They are removed by other machinery and treated with acids to make the propellant powders.

However, the enormous increase in demand long since outran the supply of linters. Staple cotton fibers were too long for the nitrating machinery; they tended to "spin" or "rope" and clogged the works. But the same standard-staple cotton, chopped into something like linter lengths by new machines invented by U. S. Department of Agriculture engineers has obviated the difficulty.

One of the new machines is able to chop up two tons of cotton an hour. It takes two machines to complete the job. The first reduces the cotton to medium lengths; the second turns it into the equivalent of linters.

Science News Letter, August 23, 1941

VETERINARY MEDICINE

Eye Disease in Cattle Reduces Yields of Meat

KERATITIS, a serious disease of the outer coating of the eye that eventually results in blindness, afflicts cattle as well as human beings. In dairy herds it brings about reduction in milk yield as high as 32%, and beef cattle are often as severely affected in reduction of their meat production, Dr. Vilo T. Rose, veterinarian of Elkton, Ky., stated at the the meeting of the American Veterinary Medical Association in Indianapolis.

There are two types of keratitis in cattle, Dr. Rose continued. One is infectious, due to the spread of the causal bacteria from animal to animal. The other is due to deficiency of vitamin A, and is especially likely to occur in lot-fed cattle, that do not have access to pasture.

The infectious type can be largely prevented with a vaccine made of weakened cultures of the causal germ. Correction of the vitamin A deficiency will eliminate the other type.

Science News Letter, August 23, 1941

MEDICINE

Disease Without Remedy

There Is No Known Cure for Infantile Paralysis But Proper Treatment Saves Many from Crippling

By JANE STAFFORD

WHEN children do not feel well, complain of headache, have hot, flushed skins indicating fever, and are sick at the stomach, wise parents put them to bed immediately and call a doctor. These symptoms are common in the beginning stages of many serious ailments. At this season, they are likely to make the doctor and the parents think of infantile paralysis, particularly if the child has some stiffness or pain in the back of the neck and is irritable.

In many cases, infantile paralysis may cause no more trouble than this sort of indefinite illness lasting about a week after which the child begins to get well without having had any paralysis at all. Unless there is an epidemic of the disease, these non-paralytic cases may not be recognized for what they are. They may be diagnosed as grippe or an acute intestinal upset.

Paralysis Comes Rapidly

In the serious cases, paralysis of the muscles of legs, arms or other parts of the body appears rather rapidly. The affected parts are limp and motionless. The disease is most dangerous when the breathing muscles are affected and in these cases life is often saved by artificial respiration given by the "iron lung" or similar cabinets which keep the patient breathing until his muscles recover.

This crippling malady is caused by a virus which attacks the gray matter in the nerve tissue that makes up the spinal cord. How the virus gets to the spinal cord is still an unsolved mystery. It may be acquired from both sick people and healthy carriers. The disease usually begins within one to two weeks after exposure. Persons known to have been exposed to the disease should be isolated for 14 days.

No remedy for infantile paralysis has yet been found, but proper treatment saves many patients from serious crippling and deformity. The first part of the treatment is planned to prevent deformity by avoiding strain on the muscles or hunched-up positions of the body. It should be started as early as possible, which is one reason why it is important to call the doctor promptly if the child's symptoms suggest infantile paralysis.

Your first thought, probably, when someone complains of sore muscles, is to offer to rub them. If the person is an infantile paralysis patient, stifle your well-meaning impulse. Nothing is more harmful to the patient and his welfare than such treatment for the deep pain or sensitiveness that may appear about the second week after the fever has subsided. It may come just about the time in the illness when friends and relatives are beginning to visit the patient, and because it may be more pronounced in the non-paralyzed muscles and only come when someone tries to move the patient, the solicitous friend, relative or attendant is all the more likely to think, quite wrongly, that a little rubbing or massage will help.

There is no place for amateurs in the treatment of infantile paralysis. The family physician himself knows that expert aid is needed and will call on the services of a specialist, if possible, as soon as he has made the diagnosis. In small towns where there are no specialists, he will be able to get advice and help from the National Foundation for Infantile Paralysis which is prepared to supply inexpensive, simple splints and other kinds of aid on very short notice.

Eight Weeks in Bed

Infantile paralysis patients must be kept in bed for at least eight weeks. The bed must have a hard mattress. A plywood board as wide as the bed and a foot shorter may be put under the mattress to prevent sagging. The bed covers and sheets should be arranged so they do not press on the feet and cause foot drop. The child should be kept on a sheet of heavy canvas attached to a rectangular frame of gas pipe. This is called a Bradford frame, and arm splints may be attached to it easily.

During the acute stage of the illness, which lasts until all muscle tenderness has gone, the treatment consists mainly of rest, splints to prevent deformities, and hot packs to relieve pain. Let the doctor prescribe these.

After the acute stage, massage and exercise are used to restore the muscles to usefulness. The details of this treatment will need to be different in every case because no two patients are affected by the disease in exactly the same way.

Next time you read or hear a dramatic story about an "iron lung" being sent at top speed with police escort across the city or to the next town to rescue an infantile paralysis patient, you can take it as an "unsatisfactory solution of an emergency which better should not have arisen," in the words of Dr. James L. Wilson of Detroit.

"Lungs" Not Well Used

Dr. Wilson recently made a survey of the use of "iron lungs" or respirators for the National Foundation for Infantile Paralysis. He found that there are at least 680 of them available in the United States and that between 400 and 500 infantile paralysis patients were treated in them in 1940.

The respirators are not saving as many lives as was originally expected of them and they are not being put to their best use, it is clear from editorial comment in the *Journal of the American Medical Association* and a report by Dr. Wilson appearing in the same issue of the Journal.

Not Always Necessary

Some of these patients should have been put in the respirators much earlier than they were, in order to get the greatest benefit from this aid. Some of them should not have been put in "iron lungs" at all. The "iron lung" or respirator, Dr. Wilson explains, is useful when the patient has trouble breathing because his breathing muscles are paralyzed by the disease. Not all patients with breathing difficulty have paralyzed breathing muscles, however. They have paralysis of that part of the throat called the pharynx, which is between the mouth, nostrils and esophagus or gullet. Their difficulty in breathing is usually due to mucus or phlegm which they cannot swallow and it cannot be helped by the respirator.

Respirators should not be reserved as a last resort in dire emergency, Dr. Wilson points out.

"I believe, though I cannot prove it, that one would probably do more good and save more muscles by using a machine to give rest to several partially paralyzed patients who might well sur-

vive without the benefit of the respirator than to save the life of one terribly paralyzed," he declares.

You can have your child or yourself vaccinated against smallpox, inoculated against diphtheria, whooping cough, lockjaw, typhoid fever and even yellow fever, if you should need to live in yellow fever infested regions. You cannot, unfortunately, provide yourself or your children with the same sort of protection against infantile paralysis. Protective vaccinations have been tried but they not only failed to protect but in some cases, authorities believe, actually caused the disease.

Keep Away From Crowds

About the only thing you can do which might help you to avoid this ailment is to cut down on visiting and attendance at public gatherings and to keep children away from crowds generally if there is an epidemic of infantile paralysis. The disease can be spread not only by sick people but by healthy persons who have recovered from it or perhaps never had it in any recognizable form but are still carrying and discharging the germs. This is what makes it so hard to stop an epidemic. Isolation of all patients is important but does not completely stop the spread.

Recent discoveries show that getting tired out and staying too long in the water when swimming, perhaps because of the chilling as well as the exertion in the last case, may help to bring on an attack. These conditions made monkeys more susceptible to the germ, or virus, of the disease. Many authorities therefore caution parents to be especially careful not to let children get over-tired and to cut down on the amount of swimming they do. Grown-ups should follow the same advice themselves. Infantile paralysis is not limited to children, in spite of its name, and grown-ups anxious to make the most of every minute of a short holiday or vacation are quite likely to get over-tired and to stay too long in the water when they go to the beach or pool.

Remember that even if the disease cannot yet be prevented altogether, its crippling and deforming effects can in large measure be prevented by prompt, adequate treatment.

Science News Letter, August 23, 1941

The Metropolitan Museum of Art has two *dummy* vases of solid wood painted to resemble real vases of hard stone, which were found in the tomb of an Egyptian priest.

MEDICINE

Army Has Special Course In Tropical Medicine

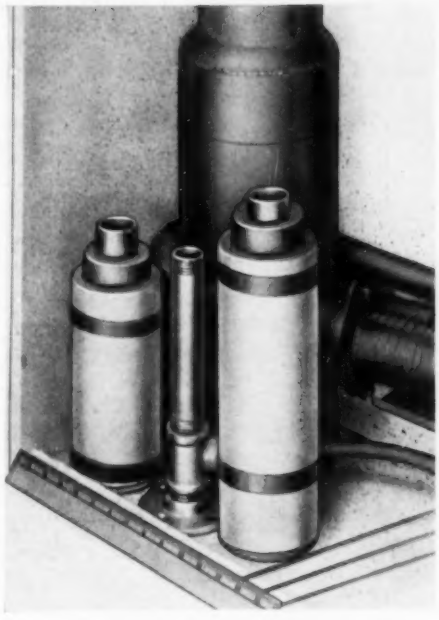
IN preparation for whatever action the United States may take in the current Latin American and Far Eastern disturbances, the War Department announces that a special course of instruction in tropical diseases has been organized at the Army Medical School, in Washington, D. C.

Doctors taking the course will learn how to fight the cholera and leprosy that are widespread in such countries as China; bejel, a non-venereal form of syphilis occurring among the Arabs of the middle Euphrates Valley; pinta, the spotted sickness of Mexico and other tropical countries; Oroya fever, an infectious disease found in Peru; and "Q" fever, a new disease found first in Australia.

In addition to tropical diseases that are rare and in some cases unknown in the United States, malaria will receive paramount consideration, but no disease is too obscure or too remote to be of great importance to the Army Medical Corps.

Vaccination against yellow fever has already been started among troops serving or likely to serve in regions such as Latin America and Africa where it is prevalent.

Science News Letter, August 23, 1941



STREAMLINED PIPES

Even air conditioning equipment is given modern artistic lines these days. This is a model cut-away section of Carrier conduit system, showing insulated pipes for hot and cold water and small drain pipe and, in the rear, air supply conduit with front take-off. Air conditioning installations, in both old and new buildings, are simplified with this new system. The conditioned air is distributed with high velocity through conduits about the size of an ordinary steam pipe and a ninth the size of former ducts.

PUBLIC HEALTH

Big Jump in Sleeping Sickness Reported From the Dakotas

A BIG jump in the sleeping sickness (encephalitis) cases in North Dakota has been reported to the U. S. Public Health Service.

The number of people stricken with this disease in the week ending August 9 was 178—more than three times the number of cases reported during the previous week.

In South Dakota, the number has also more than tripled. Cases reported jumped from 19 during the week of August 2 up to 61 for last week.

A slow report by mail brought news to Washington that Texas had 10 cases of sleeping sickness during the week ending August 2. Nothing has yet come in on the following week's toll.

Dr. James P. Leake, who was sent to North Dakota by the Public Health Service to help in battling the disease, reports that circumstantial evidence indicates the outbreak is of the Western equine type, or horse sleeping sickness.

First official word concerning the number of deaths in this outbreak came from Dr. Leake in North Dakota. He reports 41 deaths there out of 285 cases. This is a lower mortality than is usual for this disease.

Infantile paralysis is still on the increase, but, except in the South, the situation is not any more alarming than it has been in recent weeks, reports to the U. S. Public Health Service indicate.

Southern states, which have been having large numbers of cases in previous weeks, are still having them. Alabama, hardest hit by the disease, reports a jump from 49 cases, for the week ending

August 2, up to 80 for August 9. In Georgia, the number of new cases remains the same, 71. Four other southern states report increases: Tennessee, from 13 to 31; Kentucky, from 7 to 13; North Carolina, from 0 to 10; and South Carolina from 5 to 16. In Florida, the number went down from 27 to 13.

Minnesota is suffering the double trouble of a sleeping sickness (encephalitis) outbreak and infantile paraysis. The infantile paralysis cases jumped in the week ending August 9 from 3 cases to 12.

Many more victims were claimed in Minnesota by sleeping sickness, which has crossed the river from neighboring North Dakota. These cases nearly doubled in number in the week ending August 9. The jump was from 35 to 65.

Dr. Charles Armstrong, disease fighter of the U. S. Public Health Service, has been rushed to Minneapolis where he will advise the Minnesota state health authorities in connection with laboratory tests and identification of the disease in that state.

Colorado also reports an increase in sleeping sickness from 3 cases to 9.

In states in the east central part of the country, infantile paralysis cases are increasing, but the situation there is nothing like as bad as it is in the South. New York reports an increase from 12 to 30 cases; New Jersey, from 5 to 13; Pennsylvania from 15 to 17; Ohio, 16 to 27; Indiana, 5 to 12, and Michigan, 8 to 10.

In New England, where slight increases during the week ending August 2 led health officials to fear the outbreak might be spreading, reports were reassuring. A total of only 7 cases were reported for this whole region for the week of August 9, as compared with 16 for the previous week.

Science News Letter, August 23, 1941

PSYCHOLOGY

Let Children Read Comics; Science Gives Its Approval

Wild Adventures of "Strip" Heroes Called Folklore Of Modern Times, Using New Fantastic Magic

LET the children read the "funnies." Comics provide the folklore of this modern age.

Science finds that children need the lurid, blood-and-thunder adventures of Superman, Buck Rogers, the Bat Man, Flash Gordon, Popeye or the Red Comet, and their magic triumphs over space, time and gravity.

To two psychiatrists, specialists in the mental troubles of children, Dr. Lauretta Bender and Dr. Reginald S. Lourie, of Bellevue Hospital, New York University Medical School and the New York State Psychiatric Institute, popular comic strips are fairy tales dressed up in modern fashion.

In old fairy tales, the hero carried a wand with which he could achieve the impossible.

Magic in the comics of today is expressed in terms of fantastic elaborations of science with all-powerful rays, cosmic waves, flames, mechanized forms of transportation such as interplanetary traffic systems and so-called solar forces by which gravity is overcome.

But the old magic powers of capes and caps are retained in the most modern of the adventure comics, it is pointed out.

"The greater magic needed in modern folklore is due," say these psychiatrists in the American Journal of Orthopsychiatry, "to the greater dangers which assail society and the individual and which are often obscure due to scientific perfections, mechanized life, and group organizations."

Normal, well-balanced children are not upset by even the more horrible scenes in the comics as long as the reason for the threat of torture is clear and the issues are well stated.

When a child is puzzled by any lack of clarity, Drs. Bender and Lourie urge that an adult talk over the difficulty with him. This can be done, they reassure you, whether or not the adult has read the comic.

At Bellevue Hospital, they are now experimenting with a special class where the teacher clears up extremely common misinterpretations not only of comics but also of movies and radio stories.

Even the obviously emotionally unstable child should not be deprived of the possible benefits he will gain from reading the comics, these psychiatrists advise. Such children will find in the adventures of their favorite heroes the working out of their own problems and the answers to their own puzzling questions of right and wrong in this troubled world.

They tell the story of Tess, a little girl of great personal charm, who nevertheless was sent to Bellevue because of her antagonism to authority and because she had threatened suicide. Little Tess was troubled because her father had killed someone and later had killed himself after a quarrel with Tess's mother. Tess felt closely connected with her father and believed that she must follow in his footsteps.

In the hospital, Tessie was an omnivorous reader of comics and imagined her-

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● Earth Trembles

Information collected by Science Service from seismological observatories resulted in the location by the *U. S. Coast and Geodetic Survey* and the *Jesuit Seismological Association* of the following preliminary epicenter:

Friday, Aug. 15, 1:09.3 a.m., EST

About 600 miles northwest of Dakar, 200 miles north of the Cape Verde islands. Near latitude 20 degrees north, longitude 24 degrees west. Strong shock, in a region not usually regarded as seismic.

For stations cooperating with Science Service, the Coast and Geodetic Survey, and the Jesuit Seismological Association in reporting earthquakes recorded on their seismographs, see *SNL*, July 19.

self in the place of her favorite characters. Even in taking medicine, she expected to receive the magic powers some of the characters acquired from a "miracle pill."

This was encouraged by the hospital staff for "constant reading of comic books had the effect of diluting her conflicts over her close tie to her father, since over and over again good fought evil in the stories and always triumphed."

As Tessie put it, "the funnies do my imagining for me."

Science News Letter, August 23, 1941

ZOOLOGY

Apes Have Preferred Hand; Half Are "Southpaws"

CHIMPANZEES, like their human relatives, have one hand they would rather use than the other. Right-handed animals and "southpaws" were just about equally numerous in 30 animals tested by Dr. Glen Finch at the Yale Laboratories of Primate Biology.

For the test, each chimpanzee was isolated where he could not "ape" other animals, Dr. Finch said in describing the experiment. (*Science*, Aug. 1.) The animal had to reach through a two-inch square hole in the wire netting of the cage to get the piece of luscious fruit he saw there. The experimenter stood ready to snatch it away quickly in case the chimp reached with a foot or his lips, or grabbed greedily with both hands.

Eighteen of the animals used one hand consistently in more than 90% of the 800 trials given. Of these, nine were right-handed and nine left-handed.

Twenty-five out of the 30 animals tested used the same hand in 80% (640) of the trials. Of these a little more than half (14) were left-handed.

Science News Letter, August 23, 1941

BOOKS

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CHEMISTRY

Wax For Polishes May Come From Green Cotton

Scientists of U. S. Department of Agriculture, Collaborating With Chemical Company, Studying Field

WAX for use in polishes, to supplement overseas supplies now threatened with war shortages, may be obtained from a freak variety of cotton that is green instead of white. Scientists of the U. S. Department of Agriculture, collaborating with a chemical company interested in waxes, are now surveying possibilities. The company has five acres of the green-lint cotton growing in South Carolina now, for experimental purposes.

All cotton contains a little wax, but the ordinary varieties grown for fiber contain only about one-half of one per cent. The green variety, known as Arkansas Green Lint, sometimes yields as much as 17%. Its staple spins well, but the wax content is so high that the yarn cannot be dyed unless specially treated.

Best possibilities, however, seem to be in growing the cotton primarily for the wax. This is regarded as promising because it is hard to melt, a property in demand by manufacturers of polishes for shoes, furniture, floors and automobiles. It is estimated that under average growing conditions a wax yield worth close to $20 an acre should be possible. The lint remaining after wax extraction is a high-grade cellulose suitable for use in plastics, rayon and similar products.

Science News Letter, August 23, 1941

When completed, the *hydro-electric* plant of Grand Coulee Dam will have a capacity of 1,920,000 kilowatts, which is one-twelfth of the electric power now generated in the United States.

New Ways of War

by Tom Wintringham

"A terrifying—and fascinating—book", says Lewis Gannett.

This is the handbook which is being used by millions of England's Local Defence Volunteers. Tom Wintringham, poet, short-story writer and soldier of fortune, fought in World War I, commanded the British Battalion of the International Brigade in Spain, and during the last two years organized the People's Army of citizen soldiers of misfortune for Hitler.

Highlights of the book are Wintringham's forthright ideas on:

"Petrol war" replacing "Railway war" . . . development of the elastic defense and attack by infiltration . . . the myth of the man on horseback . . . the myth of the fox-hunting gentleman as a natural leader in war . . . the myth of the bayonet . . . why a democratic government can defeat a totalitarian government in war . . . the basic weakness of the German army . . . how to meet dive-bombers . . . how to stop tanks . . . how to stop motorcyclists . . . how to train soldiers . . . the value of a People's Army . . . how to arm it . . . how to make your own hand grenades . . . how to stop parachutists. . . .

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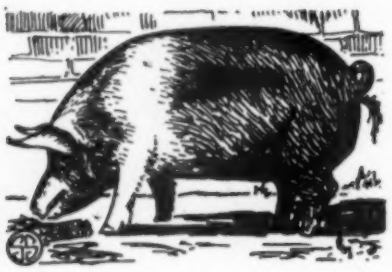
PHYSIOLOGY

NATURE RAMBLINGS
by Frank Thone



Pigs as Guinea Pigs

BECAUSE people eat like pigs, and pigs are like people in a lot of ways, real pigs are being used instead of guinea pigs in a series of large-scale researches on diet, especially vitamins, conducted at the New Jersey Agricultural Experiment Station, with the chemical manufacturing firm of Merck and Company cooperating.

The object of the experiments is to get more accurate information about the value of various dietary combinations. Pigs are more satisfactory than the usual small laboratory animals like rats and guinea pigs, it is explained, because people and pigs really do have quite similar food habits, and their reactions to shortages of certain food elements are also alike. People and pigs have been found to respond similarly to the onset of pernicious anemia, for example, and pigs also develop pellagra and other diseases with skin symptoms in a very satisfactory manner—from the research dietician's point of view.

At present there are a dozen pigs on diets at the experiment station. Eventually there will be fifty. They will probably be the most pampered porkers in the world, with a board bill running up to $10,000 a year. This is because of the high cost of the special food they eat, and particularly of the large quantities of concentrated vitamins needed in the researches.

The New Brunswick pigs get a diet such as no pig (except the guinea pig, which isn't a pig) has ever eaten. Protein is supplied in the form of washed casein, the basic material of cheese. Carbohydrates are represented by refined dextrose, and a well-known brand of cooking fat, notable alike for its purity and absence of vitamins, takes care of the fat requirements of the diet. This seeming luxury ration contains no known vitamins, so that if it were all that the pigs got they would still not thrive on it, despite its high cost.

Here is where the pigs earn their expensive keep. Vitamins are added or withheld, according to the program of the research staff, and the effects on the health of the pigs are carefully recorded.

The research program calls for study from several angles. Not only will the pigs be looked upon as deputy human beings, in their direct reactions to the various diets; they will also be studied simply as what they are, animals destined eventually to provide meat and lard and other products, and the diets will be considered as they affect their ultimate market value.

Science News Letter, August 23, 1941

INVENTION

New Swiss Burglar Alarm Operates Like Seismograph

A FIRE alarm which operates as soon as there is a smell of burning, and a burglar alarm which functions, like a miniature seismograph, from the vibrations of an intruder's steps, have recently been invented in Switzerland.

Descriptions of the new devices are given in *Mechanical Engineering* (August), taken from a Swiss publication.

Parts of a burning object, it is explained, are vaporized and become charged with electricity. The attraction between these charged particles makes complex structures of millions of atoms, which float through the air. The detector is an electrical apparatus in which a small amount of radium ionizes the air molecules, and sets up a small electrical current. When the big clumps of molecules come along, this current is greatly increased, and sets off the warning signal.

"The new fire alarm is said to be so sensitive that it functions even at the smallest fire," says the journal. "A little smoldering cotton waste which produces only smoke, but no flame, or an ounce of burning wood wool, or some pieces of newspaper, which burn without producing smoke, cause the alarm to be given at once in a medium-sized room. Generally, the sensitivity is adjusted so that no signal is sounded by the smoke of a few cigarettes or a cigar."

The burglar alarm responds to vibrations of very high frequency, set up by the forceful opening of a door or window, or even by a person's steps. These travel only a short distance, compared with the lower frequency vibrations which may be set up at the same time. When a train or truck passes outside, it may cause vibrations in the room which are really much larger than those of the burglar. However, with the train, at a greater distance, only the low frequency vibrations reach the alarm device, and it is not tuned to these.

The alarm consists of a little ball, hung in a sealed glass tube. From the bottom of the ball projects a metal pin, which touches a wire ring, and completes an electrical circuit. When the quick vibrations come, the ball moves, and the circuit is momentarily broken. This operates a relay and sets off the alarm.

The sensitivity of the device is adjusted by the size of the ball, and certain other details.

Science News Letter, August 23, 1941

PHYSIOLOGY

Oxygen and Nitrogen Have Taste at High Pressures

OXYGEN and nitrogen are described in all chemistry textbooks as tasteless and odorless; yet they do have taste and they may have smell, if you can force enough of them on the appropriate nerve-endings. The tastes of the two most abundant atmospheric gases are described by two well-known British scientists, E. M. Case and J. B. S. Haldane. (*Nature*, July 19)

The tastes were noticed during researches on means for escaping from sunken submarines, during which several persons were exposed to high atmospheric pressures. Oxygen's taste, first noticed at pressures six times that of the normal atmosphere, is at once sweetish and sourish—"like dilute ink with a little sugar." The taste of nitrogen, not perceived until the pressure rose to eight or ten atmospheres, is variously described as "harsh, metallic and indefinable."

Science News Letter, August 23, 1941

•First Glances at New Books

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ECONOMICS

THE ECONOMIC CAUSES OF WAR—Lionel Robbins—*Macmillan,* 124 p., $1.35. After examination of various theories of the cause of war, the author, who is professor of economics at the University of London, concludes that the root cause of international conflict is the existence of independent national sovereignties. "Not capitalism,'" he says, "but the anarchic political organization of the world is the root disease of our civilization." He pleads for a United States of Europe.

Science News Letter, August 23, 1941

GEOGRAPHY

GOOD NEIGHBORS: ARGENTINA, BRAZIL, CHILE and Seventeen Other Countries—Hubert Herring—*Yale Univ. Press,* 381 p., $3. A satisfying book on South America, written as though Mr. Herring were talking to you, answering the questions that you might ask about our suddenly important neighbors to the south, and answering them specifically, interestingly. As a realist, Mr. Herring warns: "American solidarity, once regarded as a pleasant elective, has become an imperious necessity."

Science News Letter, August 23, 1941

ETHNOLOGY—AGRICULTURE

THE HAWAIIAN PLANTER, Vol. I, His Plants, Methods and Areas of Cultivation—E. S. Craighill Handy — *Bernice P. Bishop Museum, Honolulu, Hawaii,* (Bulletin 161), 227 p., 8 pl., $2.50. A thorough-going monograph, describing valley by valley the lands of the Hawaiian archipelago that were under cultivation when the Europeans arrived, and with equally careful detail the crops grown, the seasons of planting and harvest, and the methods used by the natives.

Science News Letter, August 23, 1941

EDUCATION

THE UNIVERSITY OF MICHIGAN, an Encyclopedic Survey, Part I: History and Administration—Wilfred B. Shaw, ed.—*Univ. of Mich.,* 247 p., $1.50.

Science News Letter, August 23, 1941

INTERIOR DECORATING

THE BOOK OF FURNITURE AND DECORATION: Period and Modern (6th ed.)—Joseph Aronson—*Crown Pub.,* 356 p., illus., $2.75. Part I, a book in itself, describes the development of decoration; Parts II and III the elements and principles of decoration. The author is one of New York's best known interior architects; he has presented his subject in interesting style, and there are more than 200 beautiful illustrations.

Science News Letter, August 23, 1941

POLITICAL SCIENCE

AMERICA — David Cushman Coyle — *National Home Library Foundation,* 91 p., 25c. This book is about America meeting the challenge of Nazi aggression. It is thrilling reading packed with information, written in the dynamic style of the engineer-economist author.

Science News Letter, August 23, 1941

ETHNOLOGY

TWENTIETH CENTURY INDIANS—Frances Cooke MacGregor—*Putnam,* 127 p., illus., $3. Through the eye of Mrs. MacGregor's penetrating camera, here are Indians—not the "typical" or "romantic" Indian—but Arapaho families that sometimes live in store tents with radios, Mono grandmothers winnowing acorns for meal, government buildings in which Navajo affairs are handled in an impressive Arizona setting, and many another reality of Indian life as it is. Explanatory chapters describe Indian housing, land problems and other topics, but the pictures take the lead in telling their story.

Science News Letter, August 23, 1941

PUBLIC HEALTH

SCHOOL HEALTH SERVICES, A Study of the Programs Developed by the Health Department in Six Tennessee Counties —W. Frank Walker and Carolina R. Randolph—*Commonwealth Fund,* 172 p., $1.50. Physicians, public health and education authorities will find much of interest in this book.

Science News Letter, August 23, 1941

TECHNOLOGY

BULLETIN OF THE NATIONAL ASSOCIATION OF WOOL MANUFACTURERS, Vol. LXX, Activities of the National Association of Wool Manufacturers for 1940, Statistics of the Industry—*Pub. by the Assn., 386 Fourth Avenue, New York, N. Y.,* 645 p., $2.

Science News Letter, August 23, 1941

BIOLOGY

SCIENCE OF LIVING THINGS—Clinton G. Weymouth—*Holt,* 534 p., illus., $1.84. A textbook for high schools, divided into twelve basic topical units. Teachability is the outstanding characteristic of this book. Illustrations are decidedly above average.

Science News Letter, August 23, 1941

PHILOSOPHY

PHILOSOPHY AS A SCIENCE, Its Matter and Its Method—C. J. Ducasse—*Oskar Piest,* 242 p., $3. The professor of philosophy at Brown University covers in the first part some recent hypotheses as to the nature and method of philosophy and in the second part the subject matter and method of philosophy as he sees it. Prof. Ducasse has little regard for the scientist who poaches upon philosophy; "When a scientist, rendered confident by his successes in science, turns his attention to some of the problems of philosophy, the result of his attempts to solve them is in most cases even less felicitous than that achieved by philosophers."

Science News Letter, August 23, 1941

PHYSICS—PHILOSOPHY

BETWEEN PHYSICS AND PHILOSOPHY—Philipp Frank—*Harvard Univ. Press,* 238 p., $2.75. The nine papers gathered here are intended as a contribution to the history of the development of the movement known as logical empiricism. The author takes the view that the progress of physical science has nothing whatever to do with the interpretation of physics in favor of either a spiritualistic or a materialistic metaphysics.

Science News Letter, August 23, 1941

ENGINEERING

ENGINEERING DRAWING — D. E. Hobart—*Heath,* 430 p., illus., $2.75. The engineer often has to know about other kinds of drawing than merely the work of the mechanical draftsman. These are found herein, working drawing, freehand sketches, maps, construction drawing and lettering.

Science News Letter, August 23, 1941

ELECTRICITY

ELECTRICITY IN THE HOME AND ON THE FARM (2d ed.)—Forrest B. Wright — *Wiley,* 372 p., illus., $2.75. In the new edition of this book there have been no fundamental changes and it remains an excellent guide for anyone who wishes to do his own electrical work in the home, safely and properly.

Science News Letter, August 23, 1941

MEDICINE

BRUCELLOSIS (UNDULANT FEVER), Clinical and Subclinical—Harold J. Harris—*Hoeber,* 286 p., illus., $5.50. A technical book for physicians and health authorities about a disease which is apparently not so rare as was once believed.

Science News Letter, August 23, 1941

•First Glances at New Books

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NATURAL HISTORY

THE ROAD OF A NATURALIST—Donald Culross Peattie—*Houghton Mifflin,* 315 p., $3. "What went ye out into the wilderness to see?" Donald Peattie has gone often and seen much. Here he tells us, in his own characteristic style, of a trip that began among the twisted Joshua trees and the miracle of the vernal flowering of the Mojave and reached its *Ultima Thule* under the towering conifers of the Pacific Northwest, with a parallel shadow-journey back into his earlier years.

Science News Letter, August 23, 1941

ORNITHOLOGY

WILD DUCKS—*Amer. Wildlife Inst.,* 35 p., illus., 25c. Sixteen beautiful color plates of the better known species of wild ducks, with brief descriptions and thumbnail distribution maps. The running text, by two recognized wildlife authorities, tells of the thrilling mystery of waterfowl migration and describes the main flyways of North America.

Science News Letter, August 23, 1941

EVOLUTION

DEVELOPMENT OF OCCLUSION — William K. Gregory and others—*Univ. of Penn. Press,* 72 p., illus., $1.50. How all vertebrates, from fish to man, "cut their teeth." The story, first told at the University of Pennsylvania Bicentennial Conference, includes a study of the phenomenon from the paleontological viewpoint as well.

Science News Letter, August 23, 1941

GENETICS—EVOLUTION

CYTOLOGY, GENETICS, AND EVOLUTION — M. Demerec and others — *Univ. of Penn. Press,* 168 p., illus., $2. Some new discoveries and concepts in genetics, as presented at the recent University of Pennsylvania Bicentennial Conference.

Science News Letter, August 23, 1941

PSYCHOLOGY

THE AESTHETIC SENTIMENT, A Criticism and an Original Excursion—Helge Lundholm—*Sci-Art Publishers,* 223 p., $2.50. A philosophical discussion by the professor of psychology at Duke University.

Science News Letter, August 23, 1941

PHOTOGRAPHY

A GUIDE TO BETTER PHOTOGRAPHY—Berenice Abbott—*Crown Pub.,* 182 p., $2. The author, who is known for her splendid photographs recording New York City life, here gives her advice to others. The 80 illustrations give the reader examples of the finest photographic work from the days of D. O. Hill and Matthew Brady to the present.

Science News Letter, August 23, 1941

MATHEMATICS

BARLOW'S TABLES OF SQUARES, CUBES, SQUARE ROOTS, CUBE ROOTS AND RECIPROCALS OF ALL INTEGER NUMBERS UP TO 12,500 (4th ed.)—L. J. Comrie, ed.—*E. & F. N. Spon, Ltd., 57 Haymarket, London, S. W. 1,* 258 p., 9 d. For more than a century this has been a standard reference volume for those who work with figures. The third edition, in 1930, introduced modern typography to it. Now, in the fourth, the tables have been extended from 10,000 to 12,500, a feature that will be helpful with numbers just above and below unity.

Science News Letter, August 23, 1941

PHYSICS

THIS PHYSICAL WORLD, A College Course in Science—C. C. Clark, C. A. Johnson and L. M. Cockaday—*McGraw-Hill,* 528 p., illus., $3.25. With "This Living World," by C. C. Clark and R. H. Hall, this constitutes a two-volume work under the general title of "A College Course in Science." Surveying our knowledge of the physical world, particular emphasis is placed on the branches that have led to many of man's material improvements.

Science News Letter, August 23, 1941

BIOCHEMISTRY

ANNUAL REVIEW OF BIOCHEMISTRY, Vol. X—James Murray Luck and James H. C. Smith, eds.—*Annual Reviews, Inc.,* 692 p., $5.

Science News Letter, August 23, 1941

BIOPHYSICS

OPTICAL ACTIVITY AND LIVING MATTER—G. F. Gause—*Biodynamica, Normandy, Mo.* (Monograph No. 2), 162 p., $2.75. See page 120.

Science News Letter, August 23, 1941

CHEMISTRY

ORGANIC CHEMISTRY (3d ed.) — F. Stanley Kipping and F. Barry Kipping —*Crowell,* 1029 p., $6. Since it first appeared in 1894, this text (of British origin) has been widely known and used. In the present edition, there has been a complete revision, bringing it entirely up to date, although the original plan has been retained.

Science News Letter, August 23, 1941

MEDICINE

INFANTILE PARALYSIS, A Symposium Delivered at Vanderbilt University April, 1941—*National Foundation for Infantile Paralysis, Inc.,* 239 p., $1.25. This brief but comprehensive review should help to clarify for the busy general medical practitioner the conflicting reports of the past several years on methods of prevention and manner of spread of infantile paralysis, at the same time bringing him up-to-date information on the practical side of treatment and rehabilitation of the patient. The book, by bringing into perspective all phases of the problem, might also light up a dark corner that may be hiding important clues to its solution.

Science News Letter, August 23, 1941

MEDICINE

DOCTORS DON'T BELIEVE IT — WHY SHOULD YOU?, Facts and Fallacies About Health With Practical Guidance for the Layman—August A. Thomen — *Simon and Schuster,* 384 p., $2.50. Dr. Thomen not only shows up the fallacies of many popular beliefs about health and disease but gives much sound information in a style that is easy to read, easy to understand and easy to remember. Each section is introduced by a question of the type the layman himself might ask about the subject to be discussed. A good example is the opening sentence of the book, "Which should be chewed most thoroughly—meat, bread, vegetables or fruit?"

Science News Letter, August 23, 1941

BIOLOGY

THE STUDY OF MAN — Lawrence J. Henderson—*Univ. of Penn. Press,* 22 p., 25c. A brochure on "the proper study of mankind" by a well-known chemist, who has always been fascinated by the subject and who has given the world some very stimulating ideas from time to time.

Science News Letter, August 23, 1941

MEDICINE

CANCER RESEARCH (Vol. I, No. 1, January, 1941)—American Association for Cancer Research — Monthly; *Subscriptions should be sent to Dr. A. Vaughn Winchell, Business Manager, 1620 Lincoln-Liberty Building, Philadelphia, Penn.* To members of the American Association for Cancer Research, $5; to others and to libraries, institutions and organizations, $7.

Science News Letter, August 23, 1941